DOCUMENT RESUME

ED 456 797 IR 020 546

AUTHOR	Burns, Mary; Dimock, Vicki; Martinez, Danny
TITLE	TAP into Learning, Fall-Winter 2000.
INSTITUTION	Stanford Univ., CA. ERIC Clearinghouse on Educational Media and Technology.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE	2000-00-00
NOTE	26p.; Winter 2000 is the final issue of "TAP into Learning
CONTRACT	RJ9600681
AVAILABLE FROM	For full text: http://www.sedl.org/tap/newsletters/.
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	TAP into Learning; v2 n3, v3 n1-2 Fall-Win 2000
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Computer Assisted Instruction; Computer Software; *Computer Uses in Education; Constructivism (Learning); Educational Technology; Elementary Secondary Education; *Hypermedia; Interactive Video; Learning; Learning Activities; Multimedia Instruction; *Multimedia Materials; Visual Aids
IDENTIFIERS	Reflective Inquiry; Technology Role

ABSTRACT

This document consists of the final three issues of "TAP into Learning" (Technology Assistance Program). The double fall issue focuses on knowledge construction and on using multimedia applications in the classroom. Contents include: "Knowledge Under Construction"; "Hegel and the Dialectic"; "Implications for Teaching and Learning"; "How Can Technology Help in the Developmental Process?"; "Type I and Type II Applications"; "Children's Ways of Learning and the Evolution of the Personal Computer"; "Classroom Example: Trial of Julius Caesar's Murderers and Court Case Website"; "Glossary of World Wide Web Terms"; "Hypermedia: What Do I Need To Use Thought Processing Software?"; and "What Do I Need To Make a Web Page in My Class?" The winter issue, "Learning as an Active and Reflective Process," focuses on the process of learning and on using video in the classroom. Contents include: "Action + Reflection = Learning"; "Paulo Freire and Education for Critical Consciousness"; "Combining Action and Reflection in the Classroom"; "Video Documentaries: Stories from the Past"; "Storytelling in a Digital Age"; "Getting Connected"; "Screenwriting Software"; "Video Editing Software"; and "Is There a Low-Tech Alternative to All of This Video Editing and Screenplay Software?" Both fall and winter issues present a framework for constructivism, highlighting six principles that were distilled from a variety of sources on constructivism, brain research, and education research as well as Southwest Educational Development Laboratory (SEDL) staff members' experiences as teachers, learners, and observers in classrooms. Both issues include an annotated list of electronic resources. (AEF)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 456 797

TAP into Learning
Vol 2, Issue 3, Vol 3, Issue 1 Fall 2000 & Vol 3, Issue 2 Win 2000

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

J. Pollard

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

IR020546

BEST COPY AVAILABLE

TAP into Learning

Volume 2, Issue 3
Volume 3, Issue 1
Fall 2000

IN THIS ISSUE

Using Hypermedia

Knowledge under Construction 1
Hegel and the Dialectic 1
Implications for Teaching and Learning . .3
How Can Technology Help in the Developmental Process? 4
Type I and Type II Applications 5
Children's Ways of Learning and the Evolution of the Personal Computer 6
Classroom Example: Trial of Julius Caesar's Murderers and Court Case Website 7
Glossary of World Wide Web terms 9
Hypermedia: What Do I Need to Use Thought Processing Software? .10
What Do I Need to Make a Web Page in My Class? 11

To learn more about SEDL's Technology Assistance Program, visit our Web site at http://www.sedl.org/tap.

Knowledge under Construction

Learning is a process of accommodation, assimilation, or rejection to construct new conceptual structures, meaningful representations, or new mental models.

Learning is not an isolated or static process, nor does it occur in a vacuum. We enter learning situations—indeed, all situations—with some form of prior knowledge. As we interact with the world around us, and the infinite variety of images, ideas, information, and other stimuli that comprise our world, we are constantly constructing, revising, and reconstructing our knowledge and beliefs to create a new framework of understanding. Knowledge then is constantly under construction—a dynamic, evolutionary, developmental process. Think for a moment about your knowledge of the world and the beliefs you held as a child, as a teen, and ten years ago. How and why have your beliefs changed? Why did you hold the views you did at those particular points in time?

Learning is also determined by our level of biological and psychological development. As the writings of the Swiss

continued on page 2

Hegel and the Dialectic

Georg Wilhem Friedrich Hegel (1770-1831) was a German idealist philosopher whose key philosophical tenet was his proposal that all of history, and indeed all human thought and experience, could be understood through the concept of the *dialectic*. The dialectic is a tripartite construction, consisting of the idea of a *thesis*, *antithesis*, and *synthesis*. Our knowledge and concepts are constructed through opposition to something else. We form concepts of a person, object or idea through our interaction with and experience of it.

continued on page 2

A Framework for Constructivism

- Learners bring unique prior knowledge and beliefs to a learning situation.
- Knowledge is constructed uniquely and individually, in multiple ways, through a variety of authentic tools, resources, experiences and contexts.
- Learning is both an active and a reflective process.
- **Learning is developmental. We make sense of our world by assimilating, accommodating, or rejecting new information.**
- Social interaction introduces multiple perspectives on learning.
- Learning is internally controlled and mediated by the learner.

These six principles were distilled by the staff of SEDL's Technology Assistance Program from a variety of sources on constructivism, brain research, and education research as well as staff members' experiences as teachers, learners, and observers in classrooms.

Hegel and the Dialectic *continued from page 1*

For example, let's examine the way a young child forms an understanding of a dog: She can touch it, play with it, smell, see, and hear it. Her concept of "dog" is formed by these experience with this particular canine. For her, "dog" may be small, brown, long haired, with floppy ears, and a long tail. This paradigm of knowledge about "dog" is the young child's ***thesis.***

However, she will soon encounter another image of a dog—different from the paradigm she has constructed. This new dog will have different characteristics: perhaps it is large, black in color, with short hair, ears, and tail. Though perhaps not conscious of her construction of knowledge, the young girl must make a decision: does she accept this new creature as "dog" or reject this creature as "not" dog? Hegel refers to this confrontation of conflicting information as the ***antithesis.*** By assimilating/accepting this information, the young girl's concept of "dog" becomes more complex: the dog can have many colors, be of varying heights and different breeds. Thus, by experiencing this contrasting notion of dog (the antithesis) and assimilating or accommodating it into her original understanding or thesis of a canine, the young learner forms a *synthesis*—a fuller realization of "dog."

This is a rather simplified example of a profound process in human intellectual development. This dialectic—the constant interplay of thesis, antithesis and synthesis—is an apt metaphor for learning: as we develop higher forms of knowledge, we constantly confront more complex and abstract pieces of information and must decide how to reconcile often divergent pieces of information. Learning is therefore often a process of conflict resolution.

Hegel had an immense influence on American pedagogy. The *American Hegelians,* as they were called, indelibly impacted the American educational system: William Torrey Harris, whose views on education helped to shape the public school system; Susan Blow, the leader of the 19th century kindergarten movement; and John Dewey, America's leading education philosopher, and considered by many to be one of the founding fathers of constructivist learning theory.[3]

Knowledge under Construction *continued from page 1*

psychologist Jean Piaget (1896-1980) assert, children think and reason differently at different periods in their lives. The cognitive development of a child passes through a series of stages: from the *sensorimotor stage,* during which the child gains motor control, through the *pre-operational stage,* when the child acquires verbal skills. During the *concrete operational stage* the child begins to deal with abstract concepts such as numbers and relationships. Finally, in the *formal operational stage,* the final stage of cognitive development, the child begins to reason logically and systematically.[1]

Learning is oftentimes fraught with tension and conflict. If new information matches our existing understanding, we can easily assimilate it. However, if new information does not match our existing knowledge framework—or threatens our existing corpus of knowledge—we must either accommodate the new information, by forming new understandings or re-evaluating our prior beliefs and reconstructing our prior theories, or reject that new information.[2] This continuous struggle between pieces of varying and oftentimes conflicting information—this *dialectic* of learning—occurs constantly, sometimes consciously; more often than not, unconsciously, and contributes to our overall construction of knowledge. Learning then is rarely a final product. More often it is a constant evolutionary, and sometimes revolutionary, process.

---

1 Plucker, J. *History of Influences in the Development of Intelligence Theory and Testing.* http://www.indiana.edu/~intell/piaget.html. December 1998. Accessed August 2000. Piaget's four stages of mental growth form the foundation in American education of our understanding of intellectual development. Piaget himself is considered one of the fathers of constructivist learning theory.

2 Piaget, J. (1952). *The Origins of Intelligence in Children,* 6. New York: International Universities Press, Inc.

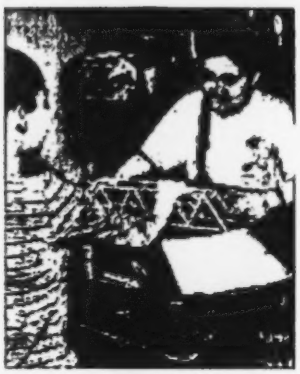
3 Hamilton, S. Hegel's *Influence on American Education.* http://www.geocities.com/Athens/5079/hegedu.html. January, 1997. Accessed August 2000.

Implications for Teaching and Learning

Theory aside, as teachers, we know that learning is a developmental process. We see the ways in which children, as they mature, can handle more difficult cognitive tasks and develop the ability for more abstract and sophisticated thinking and expression. The idea of learning as a developmental process is also formalized in the American educational system through *Bloom's Taxonomy*.[4] Bloom identified six levels within the cognitive domain, from the simple recall or recognition of facts, at the lowest level, through increasingly more complex and abstract mental levels, such as comprehension, application, analysis, synthesis, and finally, evaluation, the highest order. This classification system has influenced the way we structure curriculum, impart information, and design assessment tools.

The traditional transmission model (e.g., lecture/short answer format), arguably efficient in terms of transmitting large quantities of information within a compressed time frame, focuses too intently on the *product* of knowledge (i.e., a certain amount of information as evidenced by how many pages of text were covered, notebook pages filled, or grades received). As we have discussed thus far, learning is equally a *process* that must be examined and understood. Thus, the transmission model does not allow for the time that learners need to engage with objects, people, and concepts, and at the same time examine their relationships with such resources. Nor does it allow for the necessary reflection and dialoguing that allows teachers and learners to track the development and unfolding of procedural knowledge and to construct meaningful representations of information.

In contrast, learner-centered environments appear to offer the best potential for the development of new conceptual structures, higher order reasoning skills, and understanding complex and often conflicting information. In fact, Piaget strongly advocated learner-centered environments that allow for discovery of new ideas and materials: the teacher should allow students the opportunities to assimilate and accommodate new mental models. Children, Piaget noted, need to be active: exploring, manipulating, questioning, and discovering answers for themselves. As much as possible then, instruction should be individualized, and the teacher should act as a facilitator, motivating and guiding students, and providing for curriculum that allows for discovery.[5]



Activities should be developmentally appropriate yet challenging enough to allow for a certain level of frustration on the part of the learner. Without this *disequilibrium* (Piaget's term) or antithesis, the oppositional challenge to the learner's framework of understanding, the student's belief system is not challenged and the potential for greater intellectual growth is stifled. Or to use Bloom's taxonomy once again, the learner should scale the levels of intellectual development.

Consequently, where and when possible, we should encourage students not simply to think within their existing intellectual paradigm, but "outside the box," to develop critical thinking skills, to challenge, invent, and create. History is replete with evidence that the great intellectual discoveries and ideological shifts of the ages were accomplished by individuals—Copernicus, Galileo, Newton, Einstein, to name but a few—who confronted the boundaries of the existing paradigms of knowledge and began to explore and embrace new (and often scorned) concepts, create new bodies of knowledge, and transform our beliefs about particular disciplines.[6]

4 WestEd. *Bloom's Taxonomy*. http://www.dlm.org/library/dl/guide4.html. July, 1998. Accessed August, 2000. Bloom's Taxonomy, developed in 1956, by Benjamin Bloom and a group of educational psychologists, is a classification of levels of intellectual behavior important in learning. This system of classification includes three overlapping domains: the cognitive, psychomotor, and affective.

5 Ginn, W. *Jean Piaget: Intellectual Development*. http://129.7.160.115/inst5931/PIAGET1.html. July, 1995. Accessed August, 2000.

6 See Kuhn, T.S. (1962). *The Structure of the Scientific Revolution*. Chicago: The University of Chicago Press.

How Can Technology Help in the Developmental Process?

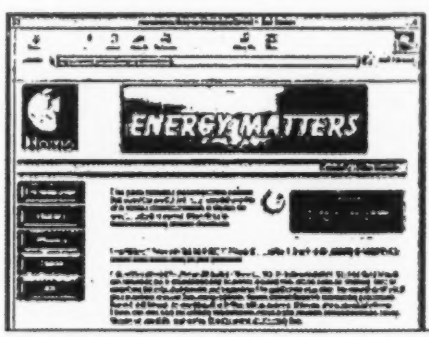
Since learning occurs by interaction with something—a resource, material, or person—particularly one that is challenging, certain types of technology appear to help with a child's intellectual development. When used appropriately, technology can become a "mind tool, function(ing) as an intellectual partner with the learner to engage and facilitate critical thinking and higher-order thinking."[7] Further, it can enable students to manipulate information in a manner that accelerates both understanding and the progression of higher order thinking skills. Finally, because of the plethora of information available on the Internet, students can learn to question, evaluate, and validate the veracity of the types of information they gather.[8]

While Type I software often reinforces recall and recognition (lower developmentally on Bloom's Taxonomy), Type II software that allows for active discovery, such as multimedia, hypermedia, and simulation software, appear to offer opportunities for higher levels of intellectual development since they allow students to become designers of knowledge rather than consumers of information.

With multimedia applications such as *PowerPoint, AppleWorks SlideShow,* or *HyperStudio,* students can communicate their understanding of the world around them, both concretely, through text, and more abstractly and creatively through the use of sound, video, and graphic representations. With simulation software, or more interactive types of software, students can enter a virtual setting in which they are confronted with new organizations of reality and intellectual challenges, which they must overcome to advance or continue in the game. In simulation applications that have an adversarial element (various chess programs, for example), or a problem-based component (See, for example, *The Energy Crisis Game* at <http://library.thinkquest.org/20331/game>), learners must understand and anticipate the thinking of their virtual opponent, make split second decisions, strategize, simultaneously negotiate various options, and determine the effect of a change in variables.[9]

Hypermedia software, such as web editors and thought processing software, is highly interactive and structures learning as an active exploratory exercise in which students discover or share knowledge. Like multimedia software, hypermedia allows learners to create and communicate understandings in a structure that is both creative and logical to the student. More flexible perhaps than multimedia software, hypermedia allows learners to determine relationships between pieces of information, in the form of hyperlinks. We discuss some examples of hypermedia on page 10.

With many Type II software applications in general, when students are allowed to work together, they teach and coach one another, argue about ideas and understandings, and are challenged by increasingly complex tasks. Technology also allows learners to work individually and autonomously at a pace that is developmentally appropriate for the individual.



7 Jonassen, D. (1996). *Computers in the Classroom: Mindtools for Critical Thinking,* 3. Englewood Cliffs: Prentice Hall

8 Adams, S., & Burns, M. (1999). *Connecting Student Learning and Technology,* 27. Austin: Southwest Educational Development Laboratory.

9 Ibid.

Type I and Type II Applications

Not all instructional software is equal in its educational outcomes, not even when it shares the same content area focus. Just as a saw and a plane shape wood differently, each type of software tool shapes learning in different ways. As educators, it's important that we reflect on and think critically about the design of software applications and how they support learning. The following classroom example provides an illustration of the different types of learning that occur with different types of software.

Mr. LaGrange's 6th grade geography class began the year as it always does: with a unit on the United States—identifying the states and memorizing the state capitals. Following a week of textbook and map activities focusing on the 50 states and their capitals, students utilized the freeware application, *USA Puzzle* (available at http://www.torpedosoftware.com) in which the user can assemble a puzzle of the United States and match the capital with its appropriate state. The software has varying levels of difficulty from 1 to 20 and provides the user with an automatic feedback mechanism and score.

Working in pairs, students spent several hours using *USA Puzzle*. Because the software is designed as a self-paced, stand-alone application, Mr. LaGrange observed but gave little assistance to his students. Their time using *USA Puzzle* paid off: when orally tested almost all students could recognize each of the 50 states and identify the various state capitals. The educational outcome—student recognition of state shapes and identification of state capitals—had been achieved.

Later in the school year, the class moved on to longitude and latitude, a common but complex concept that involves mathematical and spatial skills. Mr. LaGrange's goals for this unit were more ambitious than for the states' unit: He wanted students to understand the concepts of latitude and longitude and be able to utilize them as a navigational device. Again, Mr. LaGrange employed a software application, *On Top of the World Light* (available for $15.00 from http://www.tiac.net/users/hlynka/ontorder.htm) to help his students in this task.

Characteristics of Type I Applications	Characteristics of Type II Applications
Generally stimulate relatively passive intellectual involvement on the part of the user.	Generally stimulate relatively active intellectual involvement on the part of the user.
Are usually aimed at acquisition of facts by rote memory.	Are usually aimed at accomplishing more creative tasks.
The software developer predetermines almost everything that happens on the screen.	The user, rather than the software developer, is in charge of almost everything that happens.
The type of interaction between user and machine is predetermined by the developers of the software; the user's contribution must conform to a very limited range of acceptable responses.	The user has a great deal of control of the interaction between the user and machine, and there is an extensive repertoire of acceptable user input.
Everything the software is capable of doing can usually be observed in a very short period of time, frequently in ten minutes or less.	It generally takes many hours of use before the user has seen everything that a specific program is capable of doing.

C. Maddux, D. Johnson, and J. Willis (1997.) *Educational Computing: Learning with Tomorrow's Technologies*, 2d ed. Boston: Allen & Bacon.

While *USA Puzzle* was a self-contained application that led students through the activity, *On Top of the World* offered no such guidance or feedback and thus required more active participation by the teacher. Mr. LaGrange employed the scenario of sailors on a sea voyage circumnavigating the globe. He guided the students' exploration from one location to another with a series of increasingly complex problems centered on the concept of latitude and longitude ("You are leaving the west coast of Africa headed for New Orleans. How will you get there?", "You must now journey from Australia to the North Pole. Which line of longitude will you follow?", "You're at the North Pole. Travel forward one hour in time."). In such ill-structured problems, the student responded to the problem in differentiated

continued on page 6

Type I and Type II Applications *continued from page 5*

and individual ways, based on his or her experience and reasoning processes. Furthermore, students had to learn to figure out the problem-solving process as well as find the solution. Mr. LaGrange gauged students' success by observing their ability to navigate from one point to another and by assessing their ability to comprehend the concepts of latitude and longitude, utilize analyze and synthesize information, and evaluate the fastest routes to circumnavigate the globe.

Developmentally, by their very design, each type of software application resulted in very different types of learning. While the drill-and-practice software (*USA Puzzle*) helped students recognize and identify information, the more open-ended application (*On Top of the World Light*) relied on the students' prior knowledge to enable them to scale the ladder of intellectual development and understand abstract concepts, analyze and synthesize new information and evaluate the effectiveness of their decisions.

USA Puzzle is an example of a "closed," "full," or Type I software application, while *On Top of the World Light* is an "open," "empty," or Type II application. One is not better than the other, nor are both equally effective in achieving the same sorts of learning. Like all tools, Type I and II applications by their very design achieve different instructional outcomes. As with all tools their strength rests in appropriate use.

Children's Ways of Learning and the Evolution of the Personal Computer

Most adults appear to agree that children take to computers quite easily, indeed almost instinctively. Why is it that five year olds can effortlessly (and embarrassingly for their parents and teachers) master technology while novice adults often struggle with moving a mouse?

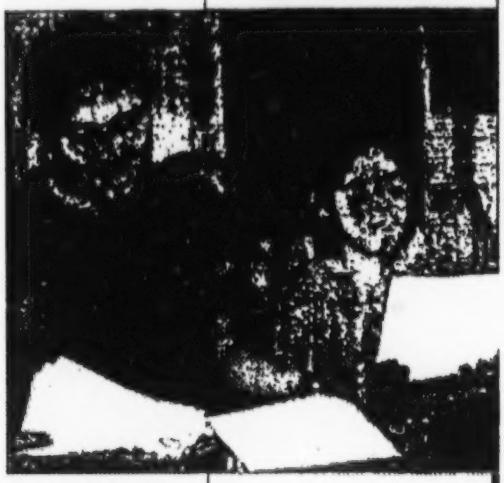
In the 1970s, engineers at the Xerox Palo Alto Research Center (PARC) labored on the optimal interface design for personal computers. The computer, in its early form, was difficult to understand and manipulate. Its interface was command-driven; essentially the user typed lines of code that prompted the computer to perform particular functions. Engineers wanted to understand how computers could be made more intuitive and user friendly. Using a group of children as their objects of study, they noted the ways in which the children interacted with and explored computers. Steve Jobs, the 24 year old founder of Apple Computer, visited the PARC campus in 1979. Xerox had just purchased shares in his fledgling company and in exchange had invited Jobs to use some of its research ideas. Jobs observed the engineers' innovations based on children's ways of learning. Using these modifications, Jobs and his partner, Steve Wozniak, created the Apple computer. Its inclusion of a "mouse" and its user-friendly interface based on a graphical user interface and object oriented programming, made Apple the first commercially successful computer. Microsoft later adapted these innovations for its Windows platform.[10]

10 Compiled from a variety of sources, including *Triumph of the Nerds* http://www.pbs.org and Weyhrich, S. http://www.hypermall.com/History/ah08.html. July, 1998. Accessed August 2000.

BEST COPY AVAILABLE

Classroom Example:

Trial of Julius Caesar's Murderers and Court Case Website



"Have you reached your verdict?" the judge addressed the jury foreman.

"We have your honor. We find the defendants, Brutus and Cassius, not guilty of treason against Rome for the murder of Julius Caesar."

Elated, the defense team broke into high fives, hugs, and cheers. The prosecution sat silently, showing no reaction to the verdict.

Nearly two millennia after his death in 44 B.C., the motives for the murder of the Roman dictator, Julius Caesar, still arouse discussion and debate. Was Caesar a tyrant who planned on subverting the Roman Republic by making himself king, thereby granting himself absolute power? Were Brutus and Cassius, his associates and assassins, patriots who saved Rome from probable tyranny, or were they anarchists who took the law into their own hands, murdering Caesar for less noble reasons?

The death of Julius Caesar had spawned a civil war, but no legal investigation into the motives of his assassins, Brutus and Cassius. Thus, in light of this grand historical omission, these fourteen year olds stepped in where the Roman legal system had left off: putting Caesar's murders on trial. Were Brutus and Cassius guilty of treason, or were they patriots who had saved Rome from despotry?

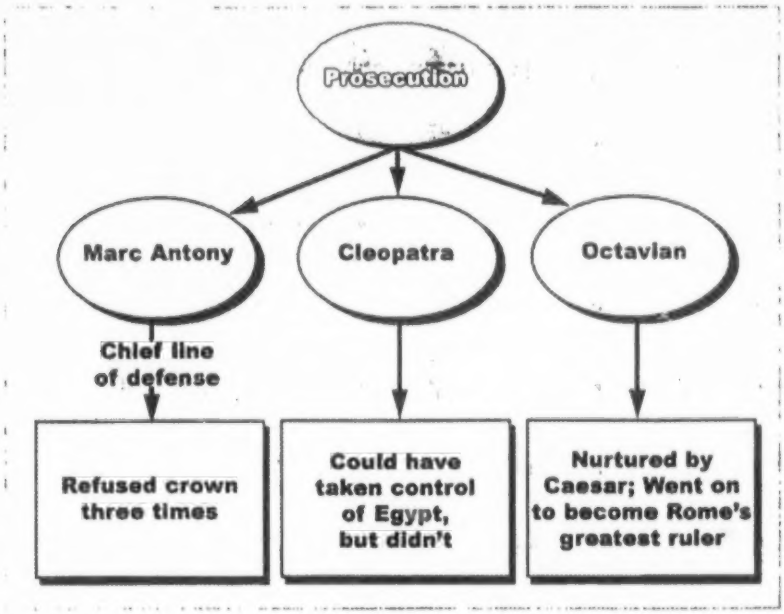
This 8th grade Latin class at McMillan Junior High School in Omaha, Nebraska had just completed a three-week unit on the life and death of Rome's most famous ruler and general, Julius Caesar. Students read Roman history texts, took notes from teacher lectures, viewed the film, *Julius Caesar,* and parts of the movie, *Cleopatra,* and took a final unit test, on which most did well. Yet, as she attempted to probe their understandings of the complexity of circumstances and motives leading to Caesar's assassination by two Roman praetors, Brutus and Cassius, the teacher was dissatisfied. The students' understanding seemed superficial; their responses formulaic. How could she best get them to think critically about the events they had just studied?

Because of its adversarial nature, a trial is an extremely nuanced and complex process. Attorneys must identify key players and facts, recognize motives and patterns of behavior, comprehend large amounts of information, organize ideas, analyze and synthesize data, apply knowledge, choose among alternatives in problem-solving, and evaluate ideas or actions. Further, they must formulate and put forth their arguments in a cogent and credible fashion and understand opposing belief systems and strategies in order to counter and manipulate them. The teacher decided that a mock trial would be the best vehicle for fostering critical thinking skills.

The trial was modeled on the American legal system, and two lawyers from the community provided in-class consultations about various legal and courtroom procedures and placed themselves on call after school. Students were very excited at having such "real-life" expertise at their disposal and approached the exercise with tremendous gravity. The prosecution team (those representing Rome) and defense team (those representing Brutus and Cassius) voted for their lead lawyers, produced a set of witnesses (e.g., Marc Antony, Cleopatra, Caesar's widow), chose witness roles, and began planning their legal strategies.

continued on page 8

 continued from page 7



An *Inspiration* Concept Map

All research was conducted via the Internet and through library reference books after school. Class time was used for constructing their legal strategy and preparing for the trial. Because of the complexity of the students' tasks—gathering information, organizing ideas, mapping strategies, and designing questions and possible answers for both their witnesses and opposing witnesses—the teacher was concerned that students have a powerful enough tool that would help them unlock all of their ideas and strategies, brainstorm, and think and organize ideas on multiple levels. Thus, students used the thought processing software *Inspiration®* as an organizational tool for planning their legal strategy. Each day, as they prepared for the trial, students used Inspiration to create timelines of events, color code friendly and hostile witnesses, organize and express their ideas, create questions for both their and the opposing team's witnesses, and map relationships among key players. At the end of the day, they gave a copy of their *Inspiration* chart to the teacher who checked it to make sure each team was organized, prepared, and had logical and comprehensive strategies. She returned each copy the next day with comments and suggestions.

In class, the teacher circulated between the groups, listening to their strategies, and through her questions guided students to a particular strategy or issue that they may have missed. In particular she encouraged students to anticipate the other team's arguments, to think as the opposing team would and in doing so address, defend against, and manipulate their arguments in a way that would best help their case.

During the trial each day after school, the defense and prosecution met separately in two classrooms using *Inspiration* to map out that day's events, create decision trees, organize emergent information and strategies, and plan the next day's testimony and strategies.

Word about the trial spread through the junior high school and other students began to ask to be involved. Students from a 7th grade Social Studies class asked to serve as jurors. One teacher volunteered to give up her one of her plan periods to serve as the judge.

While listening to her Latin colleague discuss the upcoming trial during lunch one day, the 8th grade Language Arts teacher had an idea: Why not volunteer her Language Arts students as court reporters and news analysts? But instead of having her students word process the trial notes and opinions that only they and she saw, they could create a web site which all students could access for a daily trial summary. Since one of the 8th grade Language Arts' outcomes was the ability to write persuasive arguments, students could not only document the trial, but also editorialize on its proceedings and on the justice or injustice of the final verdict. Further, students would gain the valuable skill of learning how to organize and present information—an online newspaper.

The Latin teacher enthusiastically agreed. As the trial progressed over the next three weeks, the Language Arts students constructed their web page using a free web editor. They reported on the trial, organized information, interviewed key players, and inserted digital images. They searched the Internet and created links to other sites on Julius Caesar and to other famous trials (the Scopes, Lindbergh, and Standing Bear trials, for instance). Most important, they evaluated both the proceedings of the trial and its outcome, and debated the merits and

demerits of one another's opinions. In order to do this students applied the thinking processes of analysis, synthesis, and evaluation in Bloom's Taxonomy. Not only had the construction of the web site allowed them to learn content, it had allowed them to delve into the complexities of the court case and hone rhetorical skills. The site served as a valuable resource not only the students involved with the court case, but for parents and other school colleagues.

In this newsletter, we discuss learning as a developmental activity in which learners are continuously faced with new information, which they must accommodate, assimilate, or reject. The teacher certainly could have ended the unit on Julius Caesar without conducting a lengthy and complex court case. Students would have emerged from the unit with a repository of information on the dates, characters and events leading to and immediately following Caesar's assassination. In Bloom's developmental framework, they would have attained the levels of recognition, recall, and possibly comprehension. Most likely this body of knowledge (thesis) would remain static and students' memories of the events and motives resulting in Caesar's death would have faded over time.

Instead, by engaging students in the very active and challenging experience of a court case, both the Latin and Language Arts' students wrestled with contradictory pieces of evidence (thesis/antithesis) and accommodated their belief systems to accept new—and often unwelcome—information. This interplay between often conflicting pieces of knowledge and the process of evaluation, analysis and synthesis of facts in which students engaged, resulted in the construction of new frameworks of knowledge and the development of higher order thinking skills. Thus learning became a dynamic process, as opposed to a static end product. Over time, students may have forgotten much of the content surrounding Caesar's assassination, but they gained procedural knowledge—the ability to analyze data, present arguments, synthesize information—a skill set that transcends one particular content area.

WWW Terms

Browser: An application that allows Internet users to find information on a number of topics hosted by a multitude of Internet "servers." The most popular browsers are Netscape and Internet Explorer.

Downloading: Moving a file, photo, etc. from a server or Internet to your own computer. Conversely, uploading, is the process of moving files and folders from your computer to a server.

FTP: File Transfer Protocol allows users to transfer files over a network from one computer to another. A major channel for distributing software, folders and files on the Internet.

HTML: HyperText Markup Language is a set of "tags" that tells a Web browser, such as Netscape Navigator or Internet Explorer, how to display the document.

HTTP: HyperText Transfer Protocol (HTTP) defines how Internet information is transferred through the World Wide Web over the computer network.

Internet: A network of many computer networks that communicate across dedicated high-speed phone lines.

Link: The underlined text the user clicks on to take him/her to another page or another location on the page. Links are the essential components of hypermedia—the gateways to other sites.

Server: A computer on which large amounts of data and software are stored and from which they can be retrieved. Servers are normally much more powerful than local or desktop computers and "serve" information to your local computer.

URL: Universal (or Uniform) Resource Locator. The address of an Internet site. It usually has the following naming conventions:

http://www.sedl.org

http defines how the information will be transferred. The three symbols [//], [:] and [.] separate different types of information. **sedl** is the name of the organization (and also the server in this case) and **org** indicates the type of institution.

World Wide Web: The "Web" (abbreviated WWW) is a hypermedia system for distributing information on the Internet. Because it is a hypermedia system, it supports the use of text, graphics, sound, video, and hypertext (a series of links that allows you to "go through" one document/site/photo into another). Documents are linked through HTML.

BEST COPY AVAILABLE

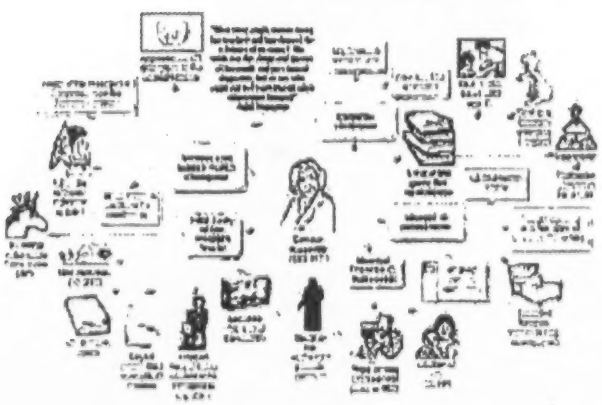
HyperMedia

Hypermedia are applications that allow the user to navigate through a series of linked elements (e.g. text-to-graphics, graphics-to-video). For the user, such structure allows for greater interactivity and greater flexibility in creating the organization of an end product.

What Do I Need to Use Thought Processing Software?

Thought processing software, though not as common in schools as word processing software, is increasingly popular in classrooms across the nation. Unlike word processing software, which tends toward the linear narrative, thought processing software allows students to organize ideas, express concepts, map relationships, build idea webs and outline their thoughts in a graphical, visual, non-linear fashion.

Thought processing software can be used across all subject areas. In literature classes, students can create character webs that show the inter-relationships among characters and create story maps of their favorite works of literature. Social studies students can make timelines of world events, create diagrams of military plans and deconstruct and diagram major national policies. Science students can recreate the periodic table of elements, draw diagrams of molecules, and show the chemical reactions of certain molecules. In all subject areas students can use thought processing software as a brain-storming, planning, systems thinking, and decision making tool, as a visual organizer, and as a concept mapping instrument.



Inspiration

The most common thought processing software found in schools today is *Inspiration*. Intuitive and easy to use, Inspiration allows students to develop ideas, visualize thinking and, in *Inspiration* 6, publish diagrams in HyperText Markup Language (HTML). Check out their web site for great ideas on using *Inspiration* across all subject areas. URL: <http://www.inspiration.com>

Concept Draw

Though not as commonly used as *Inspiration*, *Concept Draw* is another good thought processing tool that allows students to make idea webs and concept maps. The great quality of its images and its extensive libraries and templates make this a powerful tool. URL: <http://www.conceptdraw.com>

Visio 2000

Microsoft's drag-and-drop concept mapping software, *Visio2000* can be integrated with other Microsoft applications. Though specifically designed for business and industry, *Visio2000* is appropriate for an educational setting. You can order a free 60-day demo from the following URL. <http://www.microsoft.com/office/visio/>

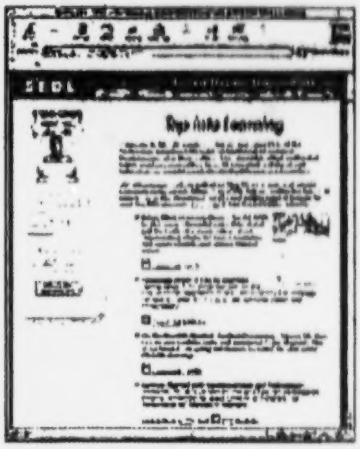
Finally, though most students tend to enjoy the flexibility and visual images of thought processing software, they can employ the same techniques of idea mapping in a low tech fashion: with a set of markers and several big pieces of chart paper.

What Do I Need to Make Web Pages for My Class?

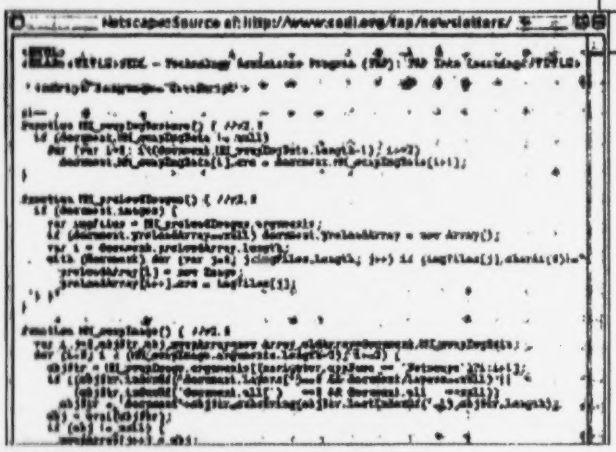
Basically, four things: a web editor, server space, some way of transferring files to the server, and an Internet connection. Let's look at the first three individually. Regarding the first, check with your school or district to ascertain its World Wide Web policies and to see if it allows students space on its server. If not, *Free Yellow* at <http://www.freeyellow.com> offers free web site hosting.

To transfer web pages from your computer to your server, you can generally (in most newer versions of web editing software) directly publish to your server. If not, you'll need some sort of FTP (file transfer protocol) software. *Fetch* <http://www.dartmouth.edu/pages/softdev/fetch.html>

BEST COPY AVAILABLE



A web page as we see it...



And behind the scenes: the same page in HTML.

is an easy and user friendly Mac FTP client (the transferring files are accompanied by a little animated terrier) that is free to educators. WinFTP is a Windows FTP client that is available free from http://www2.pcworld.com/. Just search for "WinFTP."

For a good step-by-step guide on using *Fetch*, go to <http://www.flash.net/members/tech/machelp/tutorials/software/ftp/fetch/flashnet/index.html>

For a WinFTP tutorial, visit <http://www.flash.net/members/web/winftp.html>

Since web editors are less technical and have greater instructional implications, we'll examine them in greater detail.

What is a Web Editor?

Next time you're surfing the Internet and come upon a page you like, go to the menu and choose **View/Source**. That thicket of bracketed words you see is HyperText Markup Language (HTML), the "language" in which web pages are written. While we create our web pages in English or Spanish or any other human language, the web editor "translates" them into HTML, the language of the Web. So it's a bit complicated: we create pages in English, which the web editor translates into HTML so they can be seen on the World Wide Web in English!

While HTML is not difficult to learn, it's certainly more fun and a lot easier to simply design pages the way we want and in the language we speak. Web editing software allows you to create web pages without having to know HTML. Most web editing software today is WYSIWYG (pronounced "wizzy wig") which stands for "What You See Is What You Get." This means that as you are creating the page, you see will what it will look like on the World Wide Web.

There are a number of commercially available web editors: *Dreamweaver, GoLive!, Front Page, Hot Dog*, to name but a few. Before spending money on them, you may want to experiment with a number of web editors and see what you like. If so, we have a few suggestions.

Free Web Editors

The following web editors are free and can be downloaded via the Internet. If you're just starting out with web editors, we recommend Netscape Composer (it's really a web enhanced word processing application). Once you get comfortable with web editors, try *AOLPress* or *Arachnophilia*. The latter is a favorite of a lot of web aficionados.

1. **Arachnophilia (Windows)**
   URL: <http://www.arachnoid.com/arachnophilia/>
2. **AOL Press (Windows)**
   URL: <http://www.aolpress.com>
3. **Netscape Composer (Mac/Windows)**
   URL: <http://www.netscape.com>

For more free web editors, check out:

Free Editors
<http://members.xoom.com/dafreestuff/freeeditor.htm>

Though not technically a web editor, *PhotoPage* is a free Mac application that allows you to create online photo albums or galleries. Simpler than web editing software, you use a form to create titles, choose images, and annotate your photos—and you'll have a web page in minutes. You can find *PhotoPage* at < http://www.versiontracker.com/> Search for "PhotoPage."

Demos

Additionally, most companies will allow you to demo their software for 30 days, after which it expires. This is a good way to learn more about creating web pages and find out which web editor you like best. Except for *HotDog*, the following programs (this is by no means an exhaustive list) will run on both Mac OS and Windows platforms.

1. **Claris Home Page**
   URL: <http://www.filemaker.com/products/hp_home.html>
2. **Go Live!**
   URL: <http://www.adobe.com/prodindex/golive/demodnld.html>
3. **Dreamweaver**
   URL: <http://www.macromedia.com/software/dreamweave/trial/>

continued on page 12

BEST COPY AVAILABLE

To contact the Technology Assistance Program, please call us at 1-800-476-6861 or write to us at Technology Assistance Program, SEDL, 211 East Seventh Street, Austin, TX 78701. You may also send us e-mail by writing to Vicki Dimock, Program Manager (vdimock@sedl.org).

TAP into Learning is a collaborative effort by the staff of the Technology Assistance Program. This issue was written by Mary Burns.

Mary Burns, Editor.

To learn more about SEDL's Technology Assistance Program, visit our Web site at http://www.sedl.org/tap.

Photos on pages 2 and 6 are by Bret Brookshire, Austin, TX. Photos on page 7 and first photo on page 3 are by Pamela Perier, Las Cruces, NM. Photos on pages 4 and 7 are © PhotoDisc. All other photos are by SEDL staff. Design, Jane Thurmond, Austin, TX.

© Southwest Educational Development Laboratory. This publication was produced in whole or in part with funds from the Office of Educational Research and Improvement, U.S. Department of Education, under contract #RJ9600681. The content herein does not necessarily reflect the views of the Department of Education, any other agency of the U.S. Government, or any other source. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities to all individuals in all employment matters. Available in alternative formats.

Hypermedia *continued from page 11*

Finally, you don't need a web editor to create web pages. Many word processing software programs and electronic presentation programs, such as Microsoft Word and PowerPoint, will allow you to save your documents and slide shows as HTML files. Though the quality is not as good as a regular web editor, they'll get the job done. Additionally you can use a simple text document, such as *NotePad* or *Word Pad* in Windows (Go to File/Programs/Accessories) or *Simple Text* or *Teach Text* on a Mac and create your own web pages using HTML.

HTML is a "markup" language, which you can use to mark up a text file with "tags" that tell a Web browser, such as Netscape Navigator or Internet Explorer, how to display the document. For example, the tags may tell the browser to underline a word, to center a section of text, or to display an image. Each section of your web page is bracketed by a set of tags: <BEGINNING TAG> and </ENDING TAG>[11]

We won't go into all of the tags here. Though web pages may contain innumerable tags, all web pages have at least the following set. As you'll notice the "tag" brackets the text and tells the browser how to display this information.

<HTML> This is the first and last tag of the HTML file. It identifies the file as an HTML document. **</HTML>**

<HEAD> This tag encloses the Title tag and other important header information such as when the file was created and who created it. **</HEAD>**

<TITLE> This is the title of your web page. This title will appear in the title bar of the browser. **</TITLE>**

<BODY> This is where I enter all of the information I want on my web page, including text, photos and video. **</BODY>**

For more information on learning or using HTML:

1. **HTML Quick Reference**
   URL: <http://www.cc.ukans.edu/~acs/docs/other/HTML_quick.shtml>
2. **HTML Home Page**
   URL: <http://www.w3.org/MarkUp/>
3. **Netpedia HTML Tutorials**
   URL: <http://www.netpedia.com/html/tutorials/>
4. **Learning HTML**
   URL: <http://www.devry-phx.edu/webresrc/webmstry/lrntutrl.htm>

Miscellaneous Web Publishing Resources

1. **Empowering Student Learning with Web Publishing**
   A good resource for teachers who want more information on the utility of publishing student work on the web. Covers such topics as critically evaluating sites on the web, publishing safety tips, and assessing their products on the web.
   URL:
   <http://www.siec.k12.in.us/~west/article/publish.htm>
2. **Creative Good: First Timers**
   A great place for Internet novices to learn the basics of the Internet. Loads of help pages and columns that explain some of the basics.
   URL:
   <http://www.creativegood.com/first.html>
3. **Creating Web Pages with FrontPage Editor**
   FrontPage is Microsoft's web editor. However, you don't need FrontPage in order to profit from this useful and easy to follow guide. Not only will you learn to use FrontPage if you have it, but you can also gather general information about web page design, transferring files and publicizing your web site.
   URL:
   <http://www.siec.k12.in.us/~west/online/website/>

11 These are examples of what tags look like, not actual HTML tags.

TAP into Learning

Volume 3, Issue 2
Winter 2000

IN THIS ISSUE

Using Video

Action + Reflection= Learning 1

Paulo Freire and Education for Critical Consciousness 1

Combining Action and Reflection in the Classroom 3

Video Documentaries: Stories From the Past ...5

Storytelling in a Digital Age 6

Getting Connected 9

Screenwriting Software 10

Video Editing Software ..10

Is There a Low-tech Alternative to All of This Video Editing and Screenplay Software? ..12

To learn more about SEDL's Technology Assistance Program, visit our Web site at http://www.sedl.org/tap.

Action + Reflection = Learning

Learning is both an active and reflective process. Though we learn by doing, constructing, building, talking, and writing, we also learn by thinking about events, activities and experiences. This confluence of experiences (action) and thought (reflection) combines to create new knowledge. Both action and reflection are essential ingredients in the construction of knowledge. Indeed it is difficult to extricate one from the other since we are often "parallel processing"[1] — reflecting upon activities even as we are in the midst of doing or experiencing them. Because learning is so often subconscious, we don't realize we've actually gained new knowledge or understanding until we stop to contemplate a particular activity. Reflection then is the vehicle for critical analysis, problem-solving, synthesis of opposing ideas, evaluation, identifying patterns and creating meaning — in short, many of the higher order thinking skills that we strive to foster in our students.

continued on page 2

1 Caine, R. & Caine, G. (1991). *Making Connections*, 29. Menlo Park, CA: Addison-Wesley/ Innovative Learning Publications.

2 Photo used with the permission of the Instituto de Paulo Freire in São Paulo, Brazil. http://www.paulofreire.org/

Paulo Freire and Education for Critical Consciousness

Paulo Freire, 1921–1997 [2]

Reflection, for the influential Brazilian educator Paulo Freire, was the critical component of education. Reflection, he believed, resulted in "critical consciousness" in which learners become actors, not observers, and authors of their own decisions.

continued on page 2

A Framework for Constructivism

- Learners bring unique prior knowledge and beliefs to a learning situation.
- Knowledge is constructed uniquely and individually, in multiple ways, through a variety of authentic tools, resources, experiences and contexts.
- **Learning is both an active and a reflective process.**
- Learning is developmental. We make sense of our world by assimilating, accommodating, or rejecting new information.
- Social interaction introduces multiple perspectives on learning.
- Learning is internally controlled and mediated by the learner.

These six principles were distilled by the staff of SEDL's Technology Assistance Program from a variety of sources on constructivism, brain research, and education research as well as staff members' experiences as teachers, learners, and observers in classrooms.

Paulo Freire and Education for Critical Consciousness, *continued from page 1*

"We apprehend the objective data of our reality through reflection,"[3] Freire wrote in 1973. When we as learners do not reflect on our place in the world or critically evaluate the validity of information presented to us, Freire claimed, we become passive and superficial, accepting faulty logic, untested ideas, and allowing ourselves to be swayed by deceptive arguments and polemics.

By combining action and reflection, we create what Freire called *praxis*—a set of practices informed by reflection. Thus our actions are not random or haphazard but informed and deliberate and we are aware of why we do what we do.

In Freire's model of education, the teacher is a co-learner with his or her students. Freire was critical of teachers who did not believe that their students had the ability to "discuss, to work and to create." "Education is an act of love and courage," wrote Freire in *Education for Critical Consciousness*. "It cannot fear the analysis of reality, or under pain of revealing itself as a farce, avoid creative discussion."[4]

Freire utilized the component of reflection in the adult literacy programs he devised for peasant farmers in northeastern Brazil. So successful was this educational method that formerly illiterate adults exhibited reading success in a matter of days.[5] Freire's use of reflection and critical consciousness in adult education has been emulated by adult literacy educators throughout the globe.

Learning is Both Active and Reflective, *continued from page 1*

The optimal learning environment provides sufficient time for both action and reflection. This is often difficult given the pressure to cover the curriculum and prepare students for state exams. Because of these and other demands, we often must end an activity without giving students some formal or informal means of discussing what and how they have learned. Thus, an opportunity for the meaning making, the introspection of reflection, is lost, and true learning is not fully actualized. Further complicating this, in our formation as teachers we may not have learned how to engage students in authentic speech where they are allowed to honestly share their viewpoints about a particular activity, as opposed to giving formulaic answers (reflection versus recitation). We may attempt to get students to reflect but they sit silently, unwilling or unused to sharing their thoughts, and we are unsure of how to elicit such thoughts.

Yet, as humans, we are reflective beings, who by our very nature constantly search for meaning.[6] Speech—our ability to communicate concepts—can shift us from a state of unawareness to deliberate, self-conscious action. This helps us internalize and link thought to action, allowing us to problem-solve, create coherence, and form patterns of understanding.[7] Yet, in the classroom, students' "social speech"—the sharing of their thoughts and ideas with classmates—is often silenced, thus stifling "inner speech": the internal realizations and concept-formations that can result in higher order thinking.[8]

As teachers we may have experienced the situation where we actually learn a certain subject more when we have to teach it than when we studied it as students. Certainly, this is the result of our action—our having to *do* (teach) the material—to engage with it in an authentic and meaningful manner. But it may also be the result of our having to *think about/reflect upon* the material. Thus our understanding of the material is both broadened and deepened. This holistic approach "captures" the greatest amount of learning.

As learners we are constantly constructing, revising, and reconstructing our knowledge and beliefs to create a new framework of understanding. Reflection is the engine that drives this process. Through reflection students build upon and develop existing understandings to generate new knowledge.

---

3 Freire, P. (1973). *Education for Critical Consciousness*, 3. New York: Seabury Press

4 Ibid, 38.

5 De Paiva Bello, J.L. *Paulo Freire and a New Philosophy for Education.* http://pedagogia.click2site.com/pfreire.htm. (Accessed November 2000). See also Brown, C. (1975) *Literacy in Thirty Hours: Paulo Freire's Literacy Process in Northeast Brazil.* London: Writers and Readers Publishing Cooperative.

6 Caine, R. & Caine, G. (1991). *Making Connections*, 29. Menlo Park, CA: Addison-Wesley/ Innovative Learning Publications.

7 Wittgenstein, L. (1965). *The Blue and Brown Books*, 106-107. New York: Harper Torch Books. Vygotsky, L. (1978). *Mind in Society: The Development of Higher Psychological Processes*, 25. Cambridge: Harvard University Press.

8 Vygotsky, L. (1962). *Thought and Language.* Cambridge: MIT Press. The terms, "social speech" and "inner speech" are Vygotsky's.

Combining Action and Reflection in the Classroom

Reflection does not mean that we sit in the lotus position, hypnotically humming meditative chants. Reflection can be active and multi-modal. Opportunities for reflection should occur before, during and after activities. That way students can take note of their learning starting point, assess their progress in the midst of the unit and critically evaluate their own learning at the end of the activity.

A key to helping students reflect and make meaning of their learning is a good, open-ended questioning technique designed to plumb the depths of student understanding. In addition to the "what" questions (as in, "What did you learn?", "Now what?" and "So, what does this mean?"), the "why" and "how" questions ("Why do you believe that now?", "How has your knowledge of this topic changed?") propel students toward broader and deeper understandings and encourage students to actively participate and evaluate their own learning.

As important as questioning techniques is the atmosphere of the learning environment. For students to feel comfortable sharing their views honestly and openly (reflection rather than recitation), they must feel that their opinions are valued and will not be ridiculed or minimized. In essence, the teacher must strive to create an atmosphere based on trust and respect and must act as a co-learner with the student. Educational research also speaks of the need to establish "active and passive" space—places where students can reflect and retreat from others to work quietly and intrapersonally, as well as places for active engagement and interpersonal learning.[9]

As teachers we utilize action and reflection on a continual basis in a variety of formats: classroom activities and evaluations. A test, for example, is both an action and reflection tool, prompting the student to think about how much he or she knows about a particular domain and demonstrate mastery of it. Because of the pressure associated with tests however, they may be imperfect reflection tools. Students don't see them as non-threatening but often as another meaningless academic hoop they must jump through or as a potential trap to "catch" the student.

While tests will always be with us in the classroom setting, it's important to utilize other tools and methods to wed action and reflection and provide students with structured opportunities for reflection. Such opportunities can certainly be evaluative—both formative (on-going) and summative (final). We'll examine a few below:

Writing. Essays, journals, letters, and written persuasive arguments are all effectual means of prompting student reflection. Students can do reflective writing individually or with one or more students. Journals, especially if not graded and if their private nature is maintained, can be a very potent tool for prompting student reflection. They are particularly effective if writing is on going (e.g., a 10 minute free- or guided-writing activity at the beginning of the class period—handwritten in a small notebook) and if the teacher dialogues with the student in the journal. This intimate, shared expressive space can help to create a feeling of trust that prompts the student to be more open with teacher in other academic matters.

Computer Mediated Communication. Anyone who has spent time with students knows that many of them are enamored of technology, especially of the various features of the Internet. Bulletin boards, e-mail, list servers and chat rooms can all be effective means for eliciting student reflection about a particular activity. The teacher can establish and monitor a chat room that

continued on page 4

Reflection is both "internal speech"

and "social speech"

9 Lackney, J. *Twelve Design Principles Based on Brain-based Learning Research.* http://www.designshare.com/research/BrainBasedLearn98.htm. Accessed November 2000.

Combining Action and Reflection in the Classroom, *continued from page 3*

allows students to communicate synchronously (in real time) about a particular topic, while bulletin boards, e-mail,[10] group emails (such as the free service E-Groups[11]) and list servers also allow students to discuss relevant academic topics asynchronously. Their asynchronous nature may allow for more reflection time on the part of the student, and by establishing threads, the teacher can keep bulletin board and list server discussions from meandering (too far) off topic. Finally, the anonymity of these communication media may allow for less inhibition on the part of the student.

Guided Reflection Activities. There are many simple guided reflection activities that spur students to reflect on their learning, to critically evaluate knowledge (as is age appropriate) and to become cognizant of their new formations of knowledge. Elementary school teachers (in particular) often end units of study by asking students what they've learned from a particular activity, thus blending action and reflection. Life maps, where students draw important personal landmarks and developmental routes, can be adapted for an academic exercise. Finally, the KWL activity: "What do we know? What do we want to know? What have we learned?" is a commonly used tool for getting students to reflect upon what and how much they have learned about a particular body of knowledge.

Discussion. As humans we are speech-making beings and many students welcome the chance to share their "inner speech" with their classmates. Whole group, and more intimately, small group and paired discussions, provide varied formats for students to assess their learning, share opinions, and discuss concepts about a particular activity. These shared dialogical spaces can assist learners to make sense of their learning and the learnings of others.[12] The range of questions and comments posed by a variety of individuals offers multiple perspectives on a concept or event and spurs deeper— and different types of— deliberation on the part of the learner. Individual conferences with the teacher, if conducted in an open, non-threatening atmosphere, can also be a wonderful way for student and teacher to co-reflect on an event, story, or learning experience.

Student Portfolios. Portfolios, both digital and non-digital, are an excellent way of prompting students to reflect on both the subject matter learned and on their own learning. Because they can be saved or digitally stored, students can revisit their earlier opinions, beliefs, and ideas, contrasting this "old" knowledge with their current worldviews. Digital portfolios, such as electronic slide shows, multimedia presentations, and hypermedia (such as web pages) provide a forum for students to both construct the fruits of knowledge while simultaneously reflecting on it, sharing their understandings with a larger audience in the process.[13]

Art. Many students are much better expressing their ideas visually rather than verbally or in writing. Drawing and painting, especially for younger students, may be a more appropriate way to elicit reflection and analysis about a particular topic or series of events, especially for students who have some level of discomfort communicating orally or through the written word.

10 For a list of free e-mail services, including free e-mail for kids, check out http://www.pipcom.com/~smorey/email_internet.html

11 http://www.egroups.com

12 Shotter, J. *Talk of Saying, Showing, Gesturing and Feeling in Wittgenstein and Vygotsky.* http://www.massey.ac.nz/~ALock/virtual/wittvyg.htm. Accessed November 2000.

13 For more information on student portfolios, see the following resources: http://www.ed.gov/pubs/OR/ConsumerGuides/admuses.html, http://www.uni.edu/coe/portfolio/, or http://www.kent.wednet.edu/toolbox/portfolio.html

Telling Stories From the Past

Recorded history may be viewed as the story of humankind told through the perspective of numerous individuals. This story comes to us from person-to-person oral accounts, inscriptions on walls or tablets, handwriting on scrolls, or recorded as text in a book with the invention of the printing press. The history recorded in "text books" may seem dull to students in schools if they simply travel through a parade of facts and events.

Engaging students as storytellers who document the people, places and inventions of human history can be an effective means for encouraging active learning and reflection about those facts and events. One way to do this is to give students the technological tools required for such documentation and provide an authentic audience for students working as historians.

As a middle school social studies teacher learned, video-editing technology can be an effective tool for achieving these goals. As part of a course on the history of the world, students created video documentary projects.

First, the students collected information about a self-selected historical topic. These topics included the history of railroads, the history of photography, the history of space travel, and the history of rock and roll music, among others. Students used the Internet to find web sites and experts on the subject of their documentaries. They visited the local library and a nearby university library searching for primary sources and books about their interests. They sent electronic mail to experts asking for further information or places to go to investigate their topic.

Living in a rural area meant that in most cases students were not able to visit places that housed original artifacts to videotape them. Thus, students had to learn about obtaining permission to use copyrighted materials such as collections of photographs or text from books and the Internet. Once they obtained permission to do so, the students videotaped the photographs to include in the documentaries.

After they had collected a sufficient amount of information, the students began to assemble this information as a video documentary. Using a video camera, music keyboard, and a computer, the students captured sound and images about their topics. Each documentary was a product of the ideas and images they felt were important. Throughout the process of both collecting the information and selecting the ideas and images to include in her/his production, each student went through a process of reflecting on what was important to communicate about the topic under study. Student narrations, images of photographs and other artifacts related to their topics, interviews with local community members, and music were combined to tell stories from their perspectives.

Students self-assessed their projects using a rubric collaboratively designed by the teacher and students based on the requirements for entries in the state history fair.[14] The teacher encouraged students to enter their documentaries in a regional history fair conducted by the local university. If a student won, he or she would advance to the state level and perhaps to the National History Day fair to represent her or his state.

At the regional fair, three students were selected to advance to the state history fair. Once there, each student presented her documentary to a panel of judges and answered questions about the research she conducted and how the resources were obtained. The judges also offered students suggestions about other sources they could consult to extend their study. Although none of the students was selected to advance to National History Day, all of them learned many things about the historical process, conducting research, and a topic of interest to them individually.

The students creating historical documentaries edited their stories using low-tech tools. They videotaped a number of images and then added narration, music and titles by re-recording these images on a second VCR as they spoke into a microphone or played music from a tape player and music keyboard. Since they did not know in advance what an expert might say during an interview or what artifacts they might be able to find to videotape, these students had to edit their documentary after videotaping.

Video Documentaries

National History Day® is a highly regarded and academically challenging non-profit program. The program's goal is to promote the study of history by engaging students and teachers in the excitement of historical inquiry and creative presentation. This yearlong educational program fosters academic achievement and intellectual growth. In addition to acquiring useful historical knowledge and perspective during the series of district, state and national competitions, students develop critical thinking and problem solving skills that will help them manage and use information now and in the future.[15]

14 These criteria were based on those established by the National History Day available at http://www.thehistorynet.com/NationalHistoryDay/student/criteria.htm
Evaluation forms are also available on the site at http://www.thehistorynet.com/NationalHistoryDay/Evalforms.htm

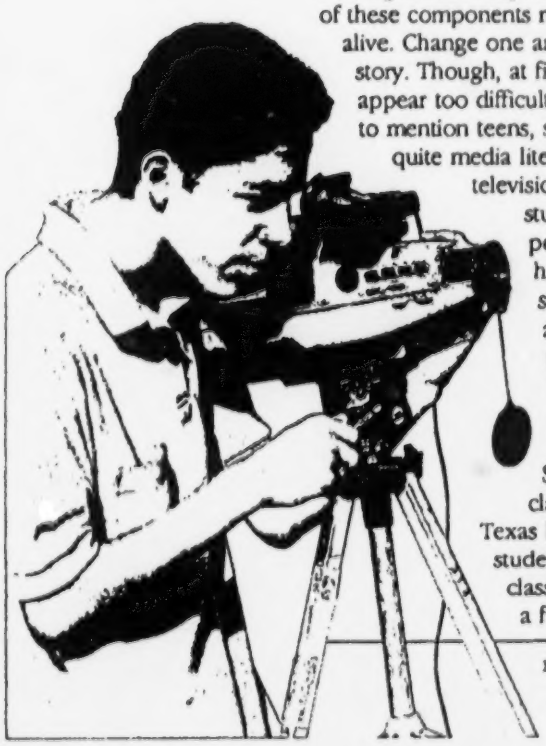
15 Taken directly from National History Day website. http://www.thehistorynet.com/NationalHistoryDay

Storytelling in a Digital Age

The fire crackles and glows bright, a blanket of stars overhead. All eyes are on the storyteller as he weaves his tale. As this idyllic setting fades into our past, a new storyteller emerges in a much different setting. *Click, tap, tap, tap, click, click.* This new storyteller uses pixels, bytes and compression. As processing speeds and broad bandwidth connections increase so does the promise of improved communication.

The digital communicator can reach millions instantly. The 1999 film, *The Blair Witch Project,* illustrated what two motivated and creative people can achieve with a camera, a computer, and an Internet connection. As a result of advances in digital production techniques, moviemaking, once the most expensive of art forms, is now affordable to the most low budget of filmmakers.[16] While not every student is an aspiring Speilberg, most students can gain tremendous insight into storytelling by delving into the creation process.

Using the camera as storyteller allows the student to control every aspect of a story just as if he or she was writing it in a novel form. She must choose settings, time, and the angle and composition of a shot. All of these components make the story come alive. Change one and you change the story. Though, at first blush, this might appear too difficult for most adults, not to mention teens, students today are quite media literate. Lower the television volume and ask students what is happening in a movie they have never before seen. Almost immediately they will be able to demonstrate that they have a good sense of the plot.



In a 9th grade Special Education classroom in an Austin, Texas high school, 100 students (yes, in one class!) two teachers and a facilitator embarked upon their own digital story. Through an experiential education program, students participated in certain physical activities, reflected on them and transferred what they learned to their own lives to help them deal with adversity.

The unit for this program was "courage" and the goal of the activity was to have students create a brief video that captured or portrayed some aspect of this human characteristic. In preparation for their video production, the teachers asked students to privately write about situations where they, or someone in their lives, displayed courage. As a whole group students also offered their opinions on what courage meant and related instances in which they had seen courage in action.

In preparation for the actual video production, students watched and discussed excerpts from a few popular films, analyzing the story lines, camera style and dialogue. Some examples were shown without sound so that students could study the story only by the way it was shot. The teachers then cast students into ten individual production companies of ten students each in order to produce their own short video. Each company chose their actors, producer, director, assistant director, Director of Photography, writer, grips and two production assistants. (Many students assumed more than one role.)

The activity was fairly technology-intensive, involving video cameras, screen writing software, and video editing software. None of the students had ever used any of this technology. While the rest of their production colleagues were brainstorming ideas for a story line, the experiential education facilitator took two students from each group and showed them how to use the school's two video cameras. They in turn were charged with teaching their group members. At various stages in the activity, the facilitator used the same strategy to show students how to use screen writing software and video editing software.

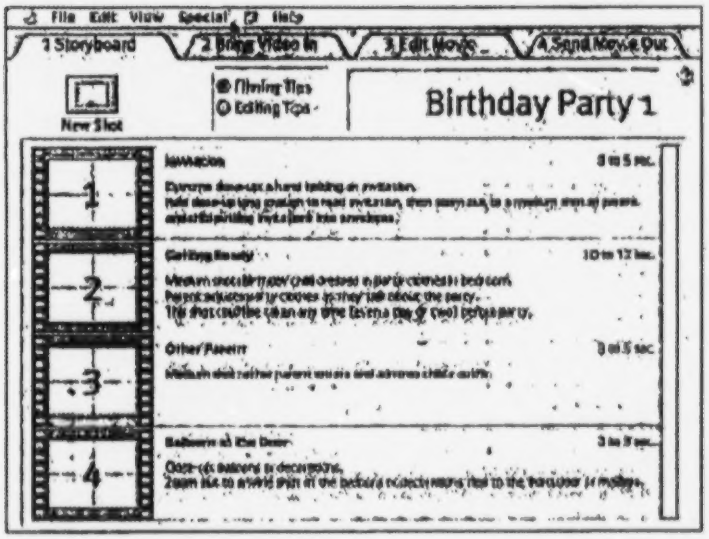
Each production company had to first propose a story line dealing with the theme

16 See *Moviemaking in Transition*, 61-69. Scientific American, November 2000.

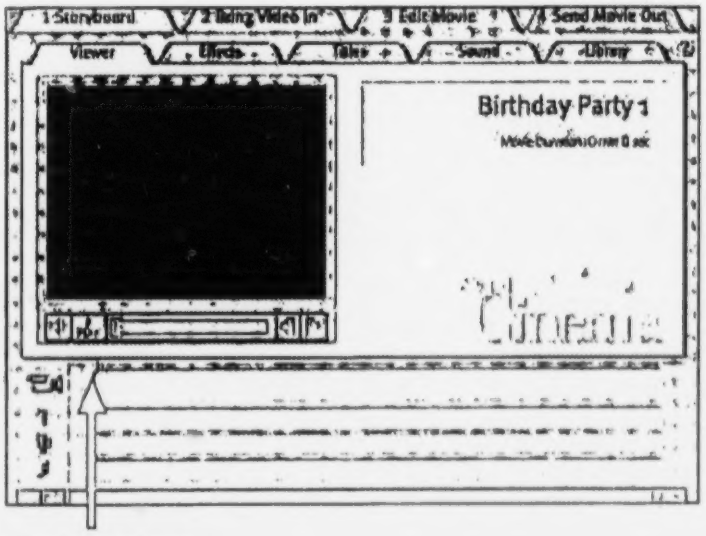
of "courage" that would be presented to the Executive Producers (teachers) for approval and "funding." Funding simply meant that the teachers approved the students' ideas and that they were free to begin writing their scripts. Refusal of funding meant that the students had to revise their concept (because of a lack of appropriateness, for example). Upon receiving funding, the production company then had to write a script. Because of the size of the class relative to the number of available computers (five), production companies took turns writing their scripts in *Sophocles*, a screen writing software, while others used chart paper and markers. While chart paper was sufficient, the screen writing software provided the students with guides for plot and character development and gave their screenplay a professional looking quality that students liked. The script was then submitted for approval and further "funding."

Upon approval of their scripts, the students began to plan for the actual film production. Using *Avid Cinema*, a video editing software, each production company created storyboards for the scenes that were to be taped. Avid Cinema allowed students to word process, edit and revise their storyboard before actual shooting began. The storyboard feature allowed students to edit their script further: most groups realized that their scripts were not compatible with the way they wanted to set up their video and spent a good deal of time discussing how they would streamline their videos. Since the videos were to be no more than five minutes in length, students had to carefully craft and edit their scripts and spent a good deal of time discussing the validity of one type of camera shot over another or one scene over another. Storyboards were then submitted for approval in order to receive more "funding."

Each company then went into rehearsals. They used their own members as actors while the Directors of Photography (DPs) practiced using video cameras and setting up shots. When actual videotaping began, the experiential education facilitator took one group at a time to videotape while the other students worked on another activity. After videotaping, students imported the video into Avid Cinema and began the editing process. The "Edit Movie" feature of the software



Storyboard Example in Avid Cinema



Video editing software:
This needle allows the user to start and stop a frame for editing by simply dragging. As seen by the menu tabs, users can also add special effects, sound (such as music and voiceovers) and transitions to their film.

continued on page 8

BEST COPY AVAILABLE

Storytelling in a Digital Age, *continued from page 7*

allowed for juxtaposing the storyboard and film frames for simultaneous video and dialogue editing. Students could edit their raw footage, view the edited version, reflect upon and discuss the merits and demerits of each version, and re-edit in a non-linear fashion. Students also discussed the best types of shots (cutaways, long shots, zooms, etc.), music and transitions to add to their videos to maintain the overall mood of their work. After editing, they were allowed one more chance at reshooting and final editing. Thus, before re-shooting, they had to have thought about, discussed, and have been absolutely certain of their actions, dialogue, and composition.

Naturally, videos varied in their treatment of the theme of courage. One video dealt with a boy and girl being honest with one another about a difficult situation, rather than not addressing it, lying about it, or avoiding one another. Another — a wrestling mini-documentary — showed a young, small boy overcoming adversity and intimidation to defeat an older, bigger opponent. A third video documented different stories of students resisting pressure to become involved with drugs and gangs.

Student projects were then premiered at a "Film Festival." The entire class watched each video and then privately voted for awards for Best Actor, Actress, Producer and Screenplay. On their ballots they had to explain why they made a particular selection. The class ended the activity by discussing what they had learned — both in terms of script writing and videotaping — but more important, in terms of what courage meant, how they themselves showed courage, and how they could draw upon this knowledge when faced with situations that demanded rational decision making.

While students could have certainly produced videos without video editing software (through "in-camera" editing, for example), video-editing software allowed for greater expediency of video production—no small matter with 100 students and five computers. Students didn't have to re-shoot the whole video if there was a problem with one frame, nor did they have to shoot the film in a linear fashion; they could simply re-film the "problematic" frame and use Avid Cinema to insert the shot where they wanted it. More important, the video editing software facilitated the reflection component that is a major piece of the creative process. The storyboard and frame editing screen allowed all students to view both the text and images of their video, generating reflection and critical analysis of each: How could a shot be better composed? Was the message of the film clear? Was another word or facial expression needed to convey a particular feeling? By using the video editing software to edit and review their work, students could almost immediately see the fruits of their revision and easily make adjustments. The software also allowed for display in alternative platforms: TV/VCR or the computer. Finally, the video editing software allowed students to create a product that appeared more professional than would have otherwise been the case.

In this newsletter we have discussed action and reflection as one formula for fuller learning. This unit on courage could merely have been a reflective activity in which students discussed or wrote about examples of courage and moved on. Or they could have created their videos without the pre-activity reflection on courage, without the in-process deliberation that accompanied video production and editing, and without the final reflection activity in which they discussed ways in which they could apply the many variations of courage to possible or probable situations they might encounter. The chances are that the quality of both their films and learning experience would have been diminished. Examples of courage might have been grandiose and less nuanced and realistic, and therefore less relevant to the students' lives, perhaps. The creation, revision and recreation of their videos parallel the ways in which learners construct knowledge. The reflective and active nature of film-making spawned a cycle of learning: the action resulting in deeper reflection and the reflection resulting in praxis — a set of deliberate and informed student actions.

Getting Connected

Getting video into your computer is tricky but not difficult. There are many different ways and different pieces of equipment that you can use. Here are some typical setups using different methods.

- VCR/Camera to video capture card in computer
- VCR/Camera to capture box to computer
- Digital video camera to the Firewire port

A *video capture card* is a card that goes inside your computer and has inputs for video and audio. Just like your sound card lets you plug in speakers or a microphone, a video capture card allows you to plug in audio-visual (AV) cords from a camera or VCR. *Capture boxes* are small boxes that attach to the serial connection on your Personal Computer (PC). These boxes also have inputs for audio and video and bring the information into your computer.

New digital video cameras have Firewire or IEEE1394 outputs that let you connect directly to computers with Firewire inputs. These are standard on many new Macintoshes but require a special card on most PC's.

Preparing your system for editing

Video editing demands a good deal of your computer. Be sure to have at least 128 megabytes of Random Access Memory (RAM). You'll need lots of room on your hard drive. (Three minutes of video can consume over one gigabyte of hard drive space.) Ideally the drive you use for capturing and editing should not have any system software on it; this slows down the process and may interfere with the quality of your digital film. It is also a good idea to defragment [17] your system regularly to keep your video files easily accessible.

I'm connected. Now where is the video?

In order to edit the video it first has to be "captured." Open your video editing software and find the commands for movie capture. Each software does it a bit differently; so consult your user's manual or the application's Help file for exact capturing procedures.

You'll want to capture your video in pieces or shots and this is where storyboarding is very helpful. Remember that you can put things in any order you want. Gather all the pieces and then drag and drop them into the order you want.

17 Defragmenting allows you to optimize both the speed and lifespan of your hard drive. Defragmentation simply places "fragments" of files closer together on a particular drive, instead of leaving fragments strewn about the drive. To defragment your PC, click on the drive you want to defragment, then choose *File/Properties/Tools/Defragment Now* and follow the instructions on the screen. Defragmenting on a Mac requires a third-party software, such as *Norton Utilities for the Mac*.

Screenwriting Software

Though students do not need screen writing software to compose a script, screen writing software can help students think about character development, dialogue, transitions and create an output that clearly delineates all components of a video or theatrical piece: speakers, dialogue, action, etc. Further, it is quite useful for those wishing to get into the more complex parts of screenwriting. The following is a list of some commonly used screenwriting applications.

WINDOWS

Sophocles
Functioning primarily like word processing software, Sophocles appears to be the simplest of the screenwriting software reviewed for this newsletter. A fully functional demo is available from the web site.
URL: <http://www.sophocles.net/>

StoryCraft
Guides the user through each stage of storycrafting, including Concept Design, Category Selection, Type/Genre Determination, Environment/Characters Description and Structure Creation.
URL: <http://writerscomputer.com/>

WINDOWS AND MACINTOSH

Final Draft 5.0 PLUS (VHS only)
Final Draft 5.0 is a mixture of word processing and screenwriting tools. Its claim to fame rests with its assertion that it is used by some famous film directors and popular television shows.
URL: <http://www.finaldraft.com/news/fd5p.html>

Dramatica Pro
Dramatica Pro functions primarily as a database with many drop-down menus (It even includes a brainstorming database component!). The user inputs the various elements and Dramatica Pro weaves them together to report the consequences, pitfalls, and issues of your story. The screenplay can be saved imported into word processing software. The demo, though not entirely fully functional, does not expire.
URL: <http://store.yahoo.com/dramatica/>

Movie Magic Screenwriter
Magic Screenwriter features a storyboarding system that allows the user to organize ideas like a series of index cards and a mechanism for creating character voices. Once students finish creating their screenplay, Movie Magic Screenwriter can read it back to them. Demo available.
URL: <http://store.yahoo.com/dramatica/movmagscreen.html>

Video Editing Software

Video editing is a process of selecting the visual and auditory elements one will include in a story. Both channels of communicating contribute to the message received by viewers. A videotape or movie is more than the dialogue spoken by the characters. For example, the author can use non-verbal communication and juxtapose images in ways that imply meaning to the viewer. When students edit, they engage in a process of learning that includes both action and reflection on the message that is being communicated by their final product.

WINDOWS

MGI VideoWave
MGI VideoWave III is powerful PC video software, which allows even novice users to create professional-quality videos quickly and easily.

MGI VideoWave Information
URL: <http://www.mgisoft.com/>

ABC VideoRoll
This free software has an intuitive interface and interactive help menus. It also has a built-in VCR controller with the ability to output video to your home VCR.

Information and Download
URL: <http://www.abc-tv.com/dv_ABC.html>

MACINTOSH

Final Cut Pro
Software for the professional. The cost (about $1000) puts this out of reach for all but the truly committed to video production. This program does everything you need to make truly professional videos. The learning curve is a bit steep and this type of editing requires a good deal of time.

Final Cut Pro Information Site
URL: <http://www.2-pop.com/>

Final Cut Pro Tutorial
URL: <http://www.puffindesigns.com/registration/dv_fcp.html>

iMovie & iMovie 2
Easy to use and free! This software is ideal for the school setting. It does enough to create professional looking movies without getting overwhelming. It is fairly easy to learn and its Firewire interface on Macs makes it easy to set up. Unfortunately, you do need to have a digital video camera (more expensive than a regular video camera) in order to take advantage of the firewire setup.

iMovie:Desktop Video Simplified
URL: <http://desktopvideo.about.com/compute/desktopvideo/library/weekly/aa102399.htm>

iMovie Info
URL: <http://lrt.ednet.ns.ca/IEI/imov.html>
URL: <http://www.apple.com/imovie/>

iMovie Tutorial
URL: <http://www.in.edcc.edu/videoproclass/WeeklyClassSchedule/09%20DigitalEditing/Digital%20Editing%20Class%2010/tutorial/iMovietutorial.htm>

WINDOWS AND MACINTOSH

Avid Cinema
Avid is a system. It has its own proprietary software and computer. This is a stand-alone system for editing so don't count on this computer for sending email or surfing the web. The cost is a bit prohibitive for the most schools.

However, Avid Cinema, though no longer in production, can still be purchased in retail outlets. With Avid Cinema you can capture video from your camcorder or VCR, then add music, voice-overs, titles and special effects. When your video is finished, you can publish it to the World Wide Web, a CD-ROM, or videotape. 1-800-949-AVID.

Avid Cinema Tutorials
URL: <http://www.avidcinema.com/learn/index.html>
URL: <http://www.sps.edu/Academics/AIS/Computing/help/howto/ht_avidcinema.shtml>

Adobe Premier
Premier is powerful and less expensive than Final Cut Pro. However, its interface is not as clean or intuitive as Final Cut Pro. The learning curve for Premier is also rather steep.
URL: <http://www.adobe.com/store/products/premiere.html>

Storyboarding Alternatives

WINDOWS AND MACINTOSH

You don't have to purchase special software to have students create scripts or storyboards. Several commonly available types of software will do the trick.

Power Point
URL: <http://www.microsoft.com/office/powerpoint/default.htm>

Inspiration
URL: <http://www.inspiration.com>

Kid Pix
URL: <http://www.kidpix.com/>

Hyperstudio
URL: <http://www.hyperstudio.com/>

BEST COPY AVAILABLE

continued on page 12

To contact the Technology Assistance Program, please call us at 1-800-476-6861 or write to us at Technology Assistance Program, SEDL, 211 East Seventh Street, Austin, TX 78701. You may also send us e-mail by writing to Vicki Dimock, Program Manager (vdimock@sedl.org).

TAP into Learning is a collaborative effort by the staff of the Technology Assistance Program. This issue was written by Mary Burns, Vicki Dimock and Danny Martinez.

Mary Burns, Editor.

To learn more about SEDL's Technology Assistance Program, visit our Web site at http://www.sedl.org/tap.

Photo on page 3 courtesy of the Rodin Museum Web site. Photo on page 4 is ©PhotoDisc. Photo on page 6 is by Pamela Porter, Las Cruces, NM. Photo on page 9 is by Bret Brookshire, Austin, TX. Photo on page 11 is by Alfredo Vasquez from Castillo ISD. Graphic design is by Jane Thurmond, Austin, TX.

© Southwest Educational Development Laboratory. This publication was produced in whole or in part with funds from the Office of Educational Research and Improvement, U.S. Department of Education, under contract #RJ9600681. The content herein does not necessarily reflect the views of the Department of Education, any other agency of the U.S. Government, or any other source. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities to all individuals in all employment matters. Available in alternative formats.

Video Editing Software, *continued from page 11*

Film Making and Other Video Editing Resources

Ifilm
Start here. An online omnibus of film and film making resources.
URL: <http://ifilm.com/>

Video Guys
Advertises itself as the "number one supplier of affordable computerbased video editing gear in the world." These guys know all the parts and pieces and what works with what. A great place for technical reviews of software and hardware.
URL: <http://www.videoguys.com/>

I Can Stream.com
A wonderful resource for aspiring film makers. Get free editing and compression software as well as server space for your videos and free tutorials on filmmaking and story boarding.
URL: <http://www.icanstream.com/>

The Art and Craft of Movie Making
Part of the British Broadcasting Corporation (BBC) Education site. Check out *So, You Want to Make a Movie?* which examines the world of independent, digital filmmaking.
URL: <http://www.bbc.co.uk/education/lzone/movie/>

Screenwriting Discussion Groups
These discussion groups are open to all comers and include all aspects of screen writing from discussing methods of creating great scripts to creating characters and tracking down leads on script submissions. For all levels of expertise.
URL: <http://www.egroups.com/dir/Arts/Movies/Screenwriting>

Film Education Home Page
Another excellent British site. Created specifically for primary and secondary school teachers in the United Kingdom who use film in their classes. Available resources include: using film in special education classes, Education Packs and a Teachers' Center.
URL: <http://www.filmeducation.org/>

Is There a Low-Tech Alternative to All of This Video Editing and Screenplay Software?

Yes! You don't need powerful computers or thousands of dollars of state of the art digital video equipment to involve students in storytelling. A pencil, notebook, hand held tape recorder, and disposable camera will do nicely. Though student productions won't have the animation of a film, their story will still be captured and communicated, nonetheless.

But if you want to go a bit "higher tech" with a video camera, you can still create videos without video editing software. Though video editing makes the process faster and allows for greater simultaneous collaboration, you can compensate for this lack of software. For example, if the video production activity on pages 6–8 were conducted *without* video editing software, students would have had to follow their storyboards exactly and set up each scene in order. They could have shot a piece and "paused" the camera while they set up the next shot. If there was a "bad take" they would have had to rewind and shoot it again from the end of the last scene. Finally, through "in-camera" editing, they could have edited their shots in the camera itself.

BEST COPY AVAILABLE